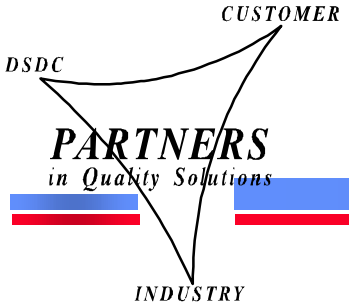
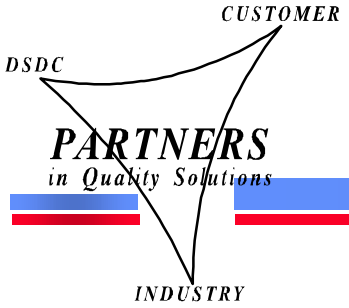


DSDC
Software Risk Management Overview

Presented By: DSDC

sepg@dsdc.dla.mil



Outline

- Give a Motivation for Risk Management
- Provide a Risk Management Overview
- Outline the SRE Process
- Introduce the “Tools”

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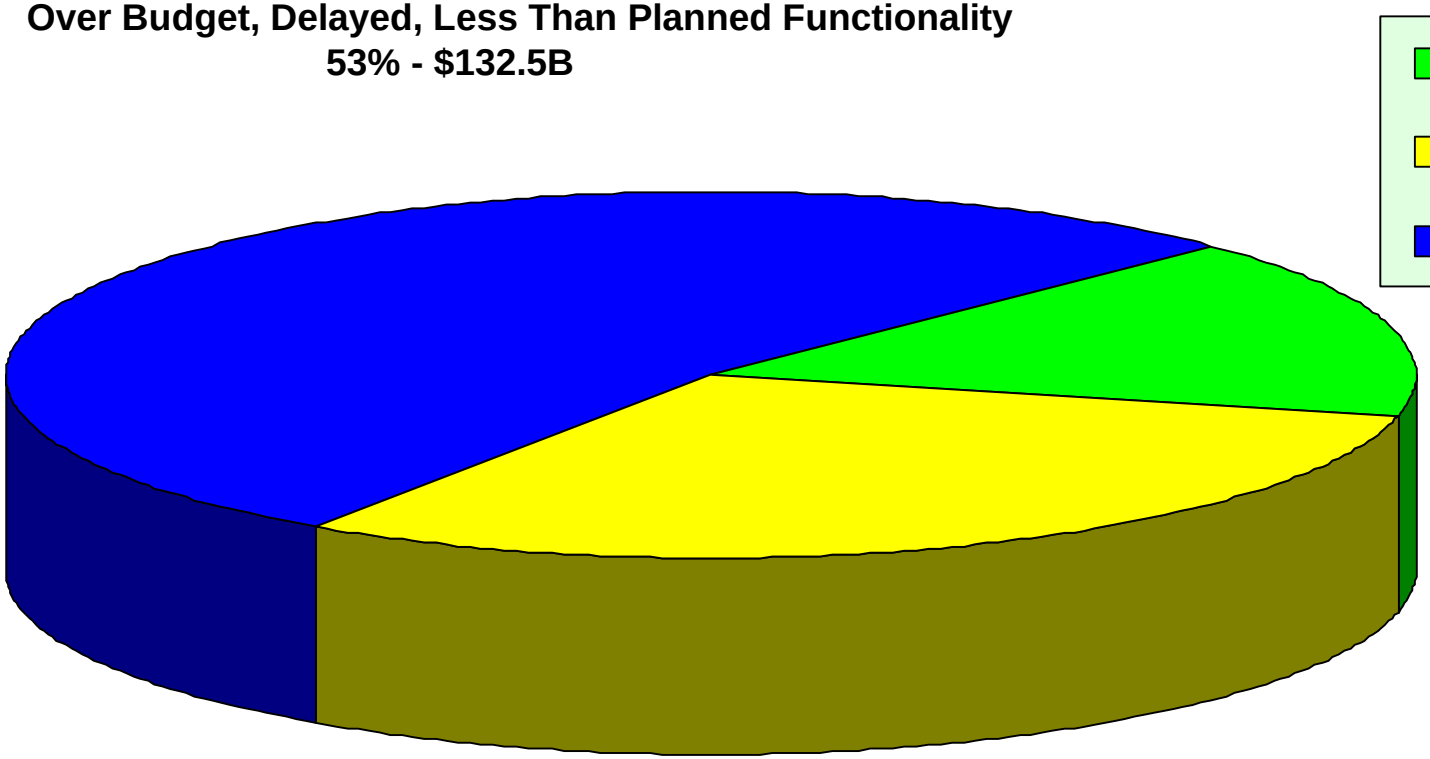
How Risky Is Software Development?

Over Budget, Delayed, Less Than Planned Functionality
53% - $132.5B

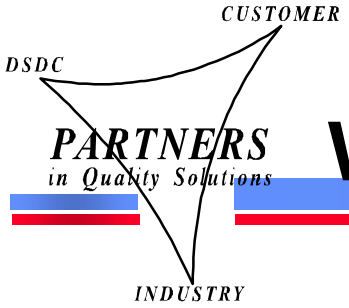


On Budget, On Time, As Requested
16% - $40.B

Canceled In Development
31% - $77.5B

Annual Expenditure for Software Development in the U.S. - $250B

***Conducted By the Standish Group International - Jan 1995**



What Are Risks? Why Do We Need To Address Them?

- Risks are **future events** with both a **probability** of occurrence, and a potential for **loss [cost].**
- Once they occur, they are problems and there will be some loss.
- Upon timely discovery, **risks can be avoided**, **eliminated**, or have their **impacts lessened**.

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What Is Risk Management?

- Making informed decisions by assessing what can go wrong and what the resultant impact will be

"Risk [management] does not deal with future decisions, but with the future of present decisions." - Dr. Robert Charette

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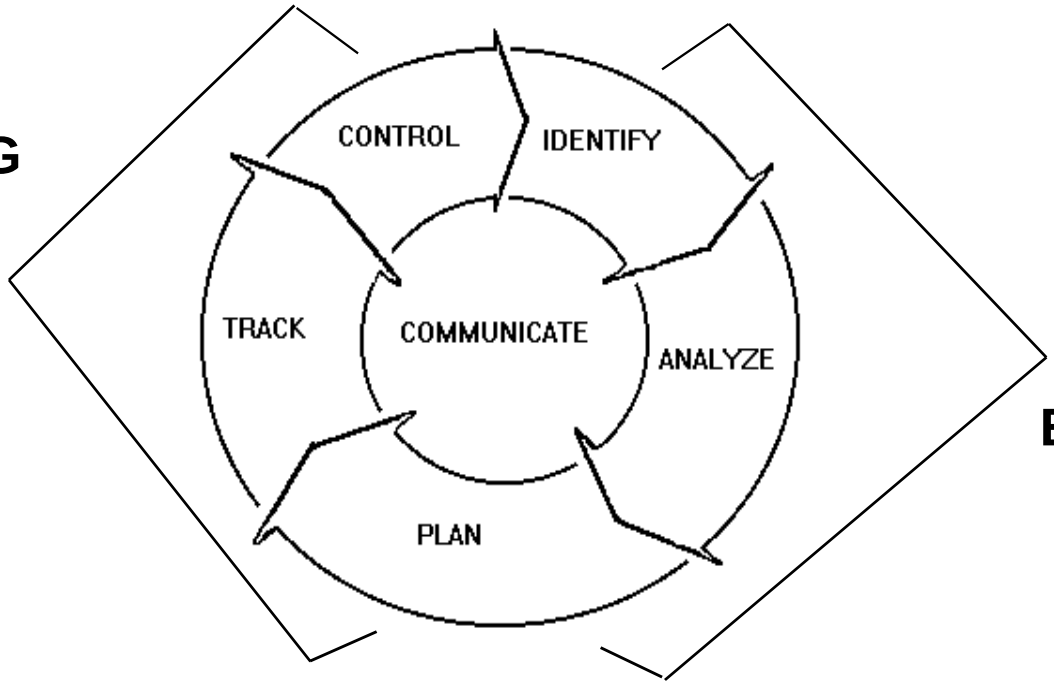
What Is The Big Picture?

SEI Risk Management Model

CONTINUING PROJECT RISK ACTIVITIES



S R E: SOFTWARE RISK EVALUATION

Who Does Risk Management ...1?

- Requirements Development
  - Oversight of Risk Management process
- Risk Management Office (-RCB)
  - Procedure & tools
  - Facilitates SREs
  - Risk consultants

Who Does Risk Management ...2?

- Product Management Office
  - Implements risk management on projects
- Project Manager
  - Manages project risks
  - Budgets for RM activities
  - Maintains project's RM worksheets an RM Plan
  - Assigns and schedules RM activities in WBS
  - Reports risk status
- Project Team
  - Identifies project risks
  - Performs risk mitigation tasks

What is the RM Process ...1?

START SRE!

Preliminary steps -- RM staff & PM:

1. Tailor Risk Management activities
2. Prepare for the SRE

What is the RM Process ...2?

Conduct SRE interviews with project team:

3. Identify risks through group interviews in standard risk statement format
4. Rate each risk:

   Probability: 1 (Low) - 4 (High)

   Severity: 10 (Low) - 40 (High)

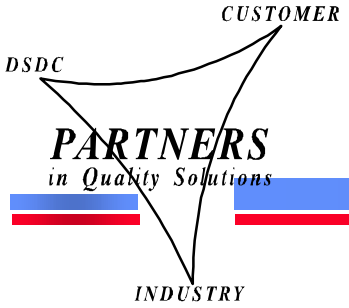
   Rating = Probability X Severity
5. Rank risks & assign RM Number

What is the RM Process ...3?

Complete SRE with project manager

6. Determine WHO is responsible
7. Determine WHAT to do:
   (Accept, Mitigate, Watch, Delegate, Transfer)
8. Determine HOW MUCH needs to be done
9. Determine HOW MANY risks to mitigate
10. Develop Mitigating Actions
11. Prepare Risk Management Plan

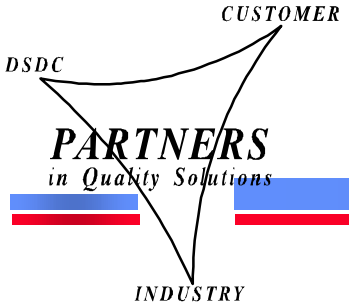
SRE is now complete!



What is the RM Process ...4?

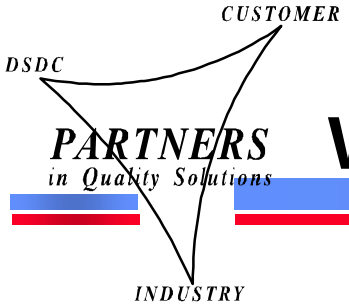
Carryout Risk Management Plan (PM):

12. Track risks
13. Control planned risk actions
14. Get next Watched risk
15. Report risk status
16. Review risk activities at end of project with RM Office



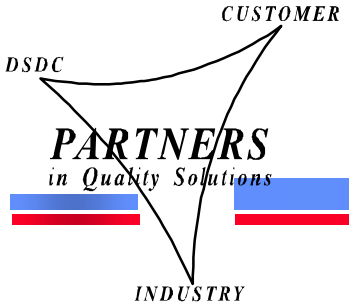
When Is Risk Management Over?

- Risk Management isn't over until the project is complete
- As closure on one risk is achieved, attack another!
- "New" project risks can be identified by **ANYONE** at **ANY TIME**
  - Apply the same iterative process to all new risks
  - Project manager does analysis and planning
  - The "Top *n*" may change as a result



What Is a Software Risk Evaluation (SRE)?

- A structured, repeatable processfor identifying and analyzing risks, and planning for their mitigation within a project or program
- Based Upon A Proven Interview Method
  - SEI's Risk questionnaire
  - Group Interviewing protocol
  - Focuses upon delivery and quality risks



What Are the Benefits of SREs ?

- Creates a forum for talking about and planning for project risks
- Provides decision-making information to the project manager

What Tools Are Used?

- The DSDC Risk Management Procedure (DSDCI 8120.004 Encl 16)
  - Risk Planning and Tailoring template
  - Standard Risk Statement Format
  - The Risk Rating Table
  - Decision Flowcharts
  - The DSDC Risk Management Plan
- The SEI Risk Questionnaire

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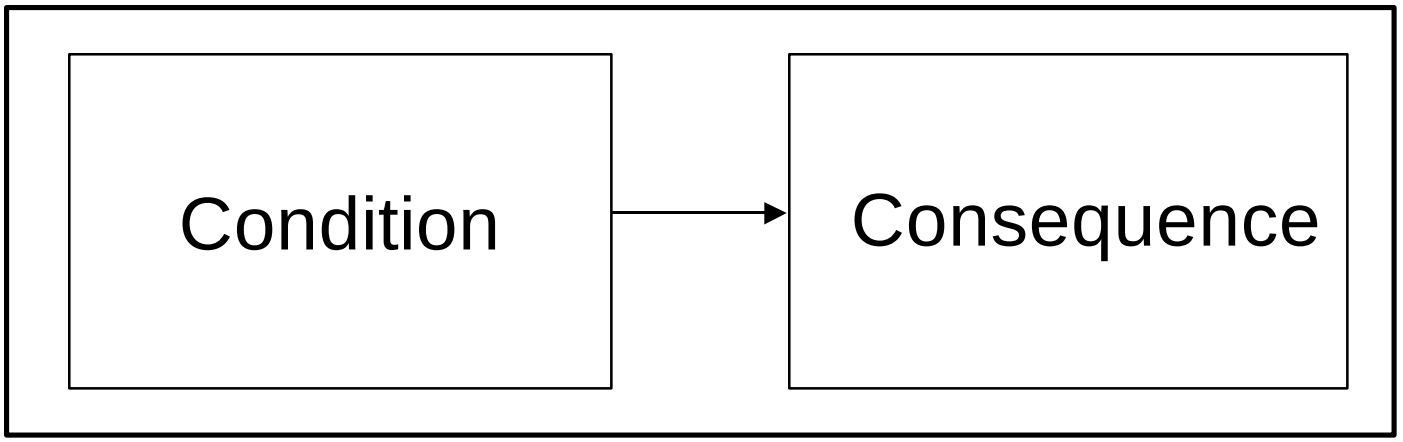
What is a Standard Risk Statement



Risk Statement

... and, as a result, ...

1. Delivery of the development system may occur after the start of the coding and unit testing phase; ...

. . . the schedule will slip each day the equipment is late.

Tools: Standard Risk Statement

... and, as a result, ...

2. The requirements are ambiguous and may not be what the customer really wants; ...

→

... there will be conflicts and rejections during customer testing.

... and, as a result, ...

3. The customer may not provide test data as promised on the dates we need it to support the schedule; ...

→

... testing will be delayed and delivery dates will slip.

Tools: Risk Planning and Tailoring Template

A. Project Identification

Project Name / # ->			
Product Line ->			
Project Scope->			
Est Size (LOC, FP)>		COST:	TYPE: EXP-CAP ENH, NEW DEV ?
Start Date:	REQ ACCEPT DATE:	SYS TEST DATE:	EST COMPLETE DATE:

B. SRE Resources

PROJECT MANAGER->		PHONE->	
PROCESS CONSULTANT->		PHONE->	
# Req Analysts:	# Data Admins:	# Contractor Anal:	>subtotal:
# Programmers:	# DB Admins:	#Contractor Prog:	>subtotal:
# Prod/Proj Mngrs:	# Customer Reps:	# TI Analysts:	>subtotal:
# CM & SQA Anal:	other:	>subtotal:	>total:

C. Readiness Analysis

FINDINGS->			
RECOMMENDATIONS->			
SRE Dates (tentative) :	SRE Location:	Interview Team (IT) ->	

D. SRE Agenda

DAY 1	DAY 2	DAY 3		

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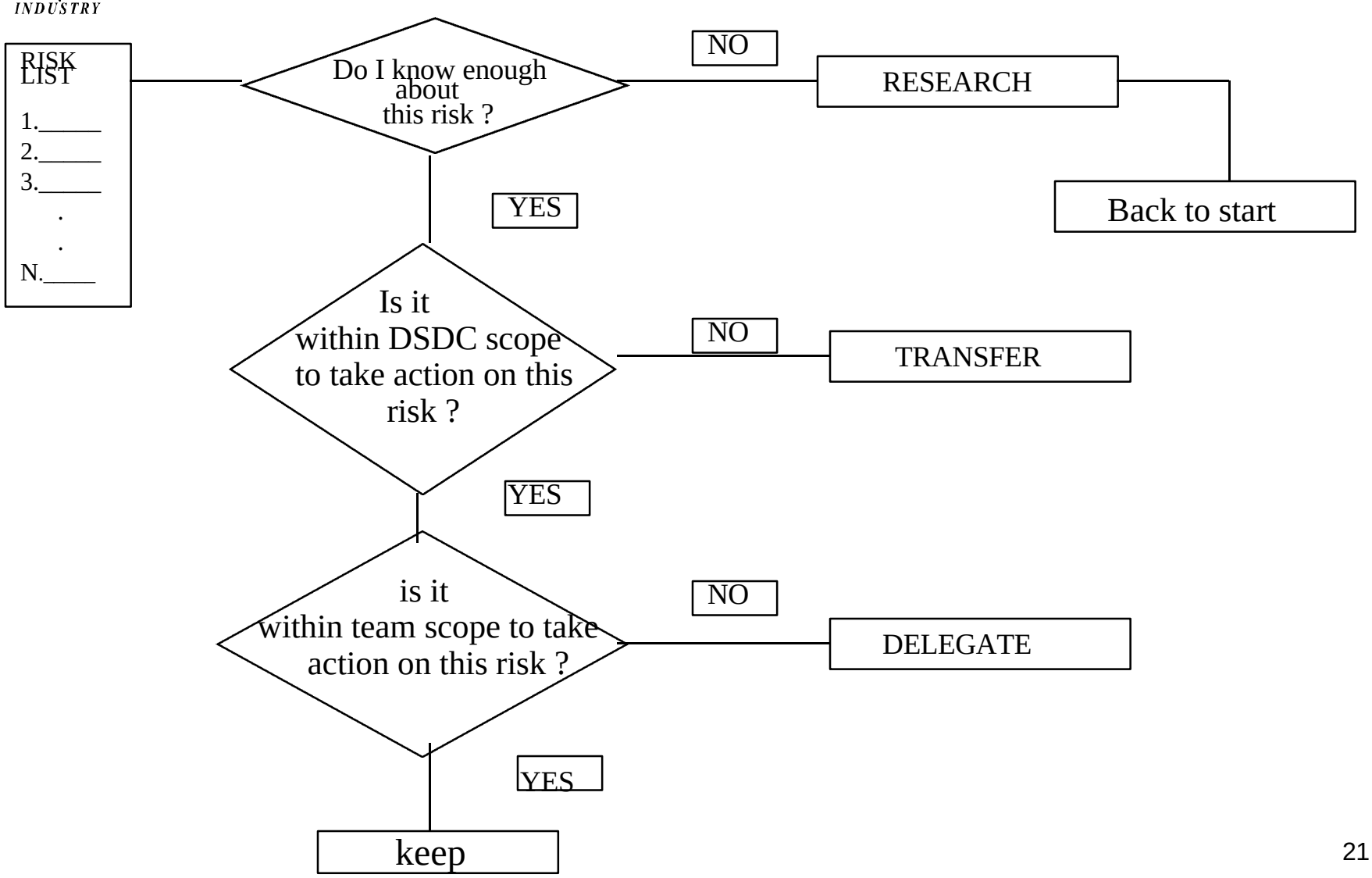
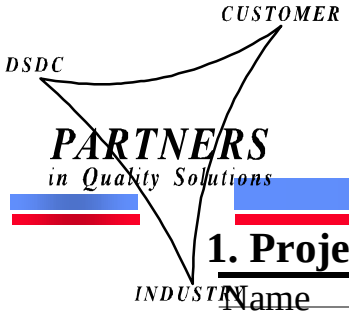
Tools: Risk Rating Table

PROBABILITY OF OCCURRENCE		*SEVERITY OF OUTCOME*	
DESCRIPTION	**FACTOR**	**FACTOR**	**DESCRIPTION**
Low	1	10	Low
Moderate	2	20	Moderate
Significant	3	30	Significant
High	4	40	High

Tools: Decision Flowchart





Tools: Risk Management Plan

1. Project Identification

RISK MANAGEMENT SUMMARY

Name	[project name]
SCR Number	[#]
Project Size	{expense enhancement | capital enhancement | new development}

2. List of SRE Participants

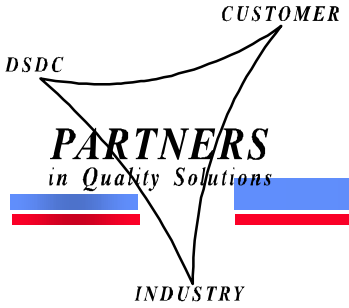
Project Manager	[names]
Team Members Present	[names]
Team Members absent	[names]
Facilitator(s)	[names]

3. SRE Results

SRE Cost	[$]
SRE Dates	[Date range for SRE]
Duration of SRE	[# days]
Hours Expended	[# hours]
Managed Risk Limit	[#]

RISK MANAGEMENT DETAILS

RM [#]	Decision Link	Risk Statement Causal Factors / Reduction Strategies	Action/Trigger	est/Act Coml	Action Status: G/Y/R/D Risk Outcome: Problem?
	Mitigate Watch Delegate Transfer Accept [Linked Risk #]	RISK: [risk condition]; and as a result [risk consequence] INTERNAL/EXTERNAL Influences: [describe influences] Pr/Sv Reduction Strategies: [describe strategies]	1. Who [describe action] number each separate action for Mitigate, Delegate & Transfer | describe the trigger for Watch	Est date if not done; Actual date if done	**Green** for action on-track; **Yellow** for action behind sched; **Red** for stopped or aborted action; **Done** for completed action.
		[Next risk]			



Tools: Risk Questionnaire

A. Product Engineering
- 1. Requirements
  - a. Stability
  - b. Completeness
  - c. Clarity
  - d. Validity
  - e. Feasibility
  - f. Precedent
  - g. Scale
- 2. Design
  - a. Functionality
  - b. Difficulty
  - c. Interfaces
  - d. Performance
  - e. Testability
  - f. Hardware Constraints
  - g. Non-Developmental Software
- 3. Code and Unit Test
  - a. Feasibility
  - b. Testing

B. Development Environment
- 1. Development Process
  - a. Formality
  - b. Suitability
  - c. Process Control
  - d. Familiarity
  - e. Product Control
- 2. Development System
  - a. Capacity
  - b. Suitability
  - c. Usability
  - d. Familiarity
  - e. Reliability
  - f. System Support
  - g. Deliverability
- 3. Management Process
  - a. Planning
  - b. Project Organization
  - c. Management Experience
  - d. Program Interfaces

C. Program Constraints
- 1. Resources
  - a. Schedule
  - b. Staff
  - c. Budget
  - d. Facilities
- 2. Contract
  - a. Type of Contract
  - b. Restrictions
  - c. Dependencies
- 3. Program Interfaces
  - a. Customer
  - b. Associate Contractors
  - c. Subcontractors
  - d. Prime Contractor
  - e. Corporate Management
  - f. Vendors
  - g. Politics